brightest and gayest of the social gatherings, under the auspices of the Students' Representative Council and its president, Mr. Dickey. The uniforms of the officers of the warships at present in St. Andrews Bay, the bright robes of the foreign and British graduates, the varied hues of the ladies' attire, and the gowns of the students themselves lent a charming novelty to the picture.

Thus ended the stately celebration of the five-hundredth anniversary of the foundation of St. Andrews University, under the most cheerful of sunny skies, pure (but not "piercing" air), and amidst the unique academic surroundings of the place, which usually, and unfortunately, are wholly absent in those great populous centres where the universities spoken of by the rector will in future be. But the great stretches of pure sand, the expanse of the blue waters of the bay (on which the warships proudly ride), and the long lines of tidal rocks remind us that nowhere within the British dominions can the sciences of geology, botany, and zoology be studied under more inspiring or more favourable auspices than in the little city by "the cold North Sea." Be that as it may, one thing is certain, viz. that both guests and hosts vied with each other in making this celebration one of the most delightful and memorable gatherings it is possible to conceive. W. C. M.

EDWARD WHYMPER.

IN Edward Whymper, who died suddenly at Chamonix on Saturday last, September 16, we have lost one who was more than a most undaunted and successful climber of mountains. Born on April 27, 1840, the son of an artist and engraver on wood, he was brought up to the work and carried it to great perfection. He went to the Alps on a professional errand in 1860 and began his career as a climber. Next year he made the first ascent of the Pelvoux, and in 1864 vanquished its neighbour, the Ecrins, the highest summit of Dauphiné. Before that he had attacked the Matterhorn. How this was at last conquered, in 1865, and of the tragedy of the return, when four lives were lost, it is needless to tell. In 1867 he visited Greenland and attempted to penetrate the inland ice. It was a failure, though not from his fault. In 1872 he returned to do some surveying on the coast. In 1879–80 he undertook his notable journey to the Ecuadorian Andes, during which he successfully ascended ten volcanic mountains, ranging from 15,000 feet to above 20,000 feet, most of them hitherto unclimbed, spent a night on the summit of Cotopaxi, and twice reached that of Chimborazo.

In later years Whymper made four or five exploratory expeditions in the Canadian Rockies and Selkirks. But he was more than a successful mountaineer: he was a keen observer of all natural phenomena. His two great and beautifully illustrated books, "Scrambles amongst the Alps" and "Travels amongst the Great Andes of the Equator," contain much of scientific value. He was a student of glaciers, and a keen critic of those who claimed for them great powers of erosion; a close observer of volcanic and other geological phenomena, and a collector who knew what was worth bringing. While at Disco Bay he obtained a fine series of fossil plants and of Eskimo relics. From the Andes he brought many specimens of rocks and other material, descriptions of which have been published, and himself wrote a paper on the aneroid barometer, besides devising a modification of the mercurial instrument for use on high mountains.

Whymper's latest books, "Chamonix and Mont Blanc," published in 1896, and "Zermatt and the Matterhorn," which appeared in the following year, are admirable of their kind, and have met with great success. He was a fellow of the Royal Society of Edinburgh, had received the Patron's medal of the Royal Geographical Society, and been decorated with the Order of St. Maurice and St. Lazare, besides being an honorary member of foreign geographical societies and Alpine clubs. T. G. BONNEY.

NOTES.

THE Government of the Commonwealth of Australia has promised to contribute 5000*l.* towards the expenses of the Mawson Antarctic Expedition, and the Victorian Government 6000*l.* This amount brings the contributions of the various Australian Governments to the sum of 22,000*l.*

THE friends of the late Christian A. Herter have contributed to a memorial fund in recognition of his labours in promoting medical science. The fund, which amounts to 8000*l.*, has been confided to the directors of *The Journal of Biological Chemistry*. The chief aim of the trust is to further the interests of that journal, which was founded by Herter.

ACCORDING to the *Revue Pratique de l'Electricité*, a bronze statue has been erected at Poleymeux, in the Rhone Department, France, in memory of Ampère. The inventor is represented standing in an attitude of meditation, the right hand raised to the forehead, the left clenched. On the side is inscribed "La Science," suggestive of the subject of his meditation.

AN International Engineering Exhibition is to be held in April next at Baku, Russia, and will be open for six weeks. The exhibits will comprise internal-combustion engines, air-compressors, electrical apparatus, motor-cars, &c. Particulars of the prospective arrangements may be obtained from the sole honorary representative in this country—Dr. P. Dvorkovitz, 1 Broad Street Place, E.C.

DR. R. KARSTEN, lecturer in comparative religion in the University of Helsingfors, has started on an expedition to Gran Chaco and Bolivia for the purpose of making investigations on the sociology and religion of various tribes of natives, some of whom are little known, while others have never been visited. He will be accompanied by his cousin, O. Lindholm.

M. G. FAYET, of the Paris Observatory, has been appointed astronomer at the Nice Observatory, in succession to M. Simonin.

MR. MARCONI has been elected president of the Junior Institution of Engineers in succession to Sir J. J. Thomson, F.R.S.

MR. J. J. NOCK has been appointed by the Secretary of State for the Colonies, on the recommendation of the Kew authorities, curator of the Hakgala Gardens, Ceylon.

THE meeting of the International Sanitary Conference to revise the provisions of the convention of 1903 for the prevention of the invasion and propagation of plague and cholera, is to take place in Paris on October 10 next.

A CONFERENCE of members of the Museums Association and others interested is to take place in the Free Public Museums, Liverpool, on Wednesday, October 18, the object being to discuss subjects of interest to those concerned in the work of museums.

PROF. LUIGI CARNERA, hitherto the director of the International Latitude stations at Carloforte and Oncativo, has been appointed professor of astronomy and geodesy in the Istituto Idrografico della R. Marina at Genoa, to which address he desires all communications to him to be sent.

THE new session (the seventieth) of the Pharmaceutical Society's School of Pharmacy is to be opened on October 4, when the inaugural address will be delivered by Dr. J. Macdonald Brown. The Hanbury gold medal will be presented on the occasion to M. Eugène Léger, of the Hôpital St. Louis, Paris.

A REUTER message from Adelaide states that Mr. Brown, the South Australian Government geologist, reports that the uranium ores recently discovered in the northern portion of South Australia possess great importance, owing to the limited extent of the world's supply of radium-producing ore. He also reports the existence of extensive deposits of corundum in the same district, and recommends prospecting there for rare gems.

THE third exhibition of small power engineering appliances, models, and scientific apparatus will be held at the Royal Horticultural Hall, Vincent Square, Westminster, on October 13 to 21. It will comprise working and stationary engineering models of all kinds, small power steam, gas, and oil engines, lathes and light machine tools, electrical appliances, &c. There will also be a completely equipped model engineering workshop, in which demonstrations of metal-working processes and small engine building will be given daily.

AN agreement has been signed by the representatives of the United Kingdom and Germany, the carrying into effect of which will mean a thorough investigation into the extent of sleeping sickness in the Gold Coast Colony, the Ashanti and Northern Territory Protectorates, and Togoland. Each Government will keep the other informed of the incidence, extent, and possible spread of the disease in its territory, and will treat the other's native subjects free of charge; but each may impose restrictions on the frontier traffic and may prevent suspected sufferers from crossing its border. The agreement is for three years certain from December 1, 1911, and continues thereafter for yearly periods, unless denounced at least six months before the close of a year.

IT is reported in *The Lancet* that the chief medical officer of one of the Austrian army corps has recently ordered the use of Calmette's serum against serpent-bites, and a fairly large stock of it has now been issued to each regiment in the south of the Empire. The men and the medical officers are instructed in the use of it, and regular inspections of the stock, as well as lectures on the natural history of the poisonous kinds of serpents, are provided for. In addition to the serum, the various appliances necessary for its proper application have been supplied to the army hospitals. Hitherto much dependence has been placed on the treatment of such injuries by alcohol and the application of permanganate of potash.

IN May last great excitement was created in Turkey and throughout the Mohammedan world by the rumour that a party of English archæologists had profaned the Mosque of Omar at Jerusalem in search of the regalia of Solomon, the Ark of the Covenant, and the Tables of the Law. A full account of the results of this expedition appear in *The Field* of September 16, of which a summary is given by *The Times* of the previous day. The excavations were chiefly devoted to what is known as the Virgin's Well and the maze of tunnels and chambers connected with it. Many fragments of Jewish and Hellenistic pottery were found. While some of it may be attributed to Canaanitish potters, none can be safely dated so late as the ninth century B.C. One Israelitish lamp, in almost perfect condition, is certainly as old as the eleventh century B.C. The Hellenistic pottery betrays indubitable evidence of that school of pottery which was transformed in the eighth and ninth centuries B.C. by Cypriote or Rhodian influence.

THE mediæval belief that the neuro-hystero-psychic manifestations known as Tarantism, because they were attributed to the bite of the Tarantula spider (*Lycosa tarantula*), has again appeared in the Troad, according to an interesting account given by a correspondent of *The Times* in its issue of September 9. The ecstatic dances, now said to be due to the promptings of the spirit of St. George, are similar to those which prevailed in Europe from 1374 to the beginning of the sixteenth century, the only difference being that in the present case the excitement is shared by men as well as women. The correspondent quotes two instances, which may probably be attributed to automatic suggestion, in which spider bites were said to be the cause of similar phenomena in one of the Troad villages. Similar manifestations are said to have occurred recently in the small island of Marmora, and at Balouki, a suburb of Constantinople. It is suggested that the investigation of these phenomena should be undertaken by medical experts and by the societies devoted to psychical research.

DR. MAX OHNEFALSCH-RICHTER publishes in *The Times* of September 11 an interesting letter on the discoveries of the Prussian Academy's archæological expedition to Paphos, in Cyprus. We appear to allow the Germans to excavate as they please in one of our colonies. That is very good of us, and it is all to the good of science; but it is a pity that our archæologists cannot be digging in the kingdom of Cyprus too. That little island-realm, which owns the sway of George V. (in succession to Richard Lionheart, who was the first English King of Cyprus) is full of archæological treasures which only await the spade. Witness the fine collections of Minoan antiquities from Enkomi in the British Museum. Dr. Ohnefalsch-Richter describes antiquities of a later period, chiefly Greek inscriptions, written in the peculiar Cypriote syllabic script, from Paphos. A discovery of his own at Rantidi last year gave the impetus to the Prussian work which has resulted in so great an addition to our knowledge of Cypriote inscriptions. The site on which they have been found by Dr. Zahn is that of the ancient high-place of Aphrodite at Paphos.

INFORMATION has been received of the arrival of the magnetic survey vessel, the *Carnegie*, at Mauritius on August 6, having been thirty-one days out from Colombo, Ceylon. The exceptionally large chart errors (approximating in magnetic declination to four degrees for one extensively used chart and for another even to six degrees) which were shown on the portion of the cruise from Cape Town to Colombo, *via* St. Paul I., April–June, have been confirmed by the cruise from Colombo to Mauritius. The *Carnegie* also arranged her route so as to intersect the tracks of the *Gauss* (1901–3), and thus has been able to secure valuable secular variation data. A fuller account is published in the September issue of *Terrestrial Magnetism and Atmospheric Electricity*. Dr. Bauer, during his visit to Australian institutions, was able to set afoot a general magnetic survey of Australia, one of the largest land areas remaining to be explored in this respect. The survey is to be conducted under the joint auspices of local organisations and of the Carnegie Institution of Washington, the observer-in-charge for the latter being Mr. E. Kidson, formerly of the Christchurch Magnetic Observatory, and more recently observer on board the *Carnegie*. Cooperation has also been effected between the Mawson Antarctic expedition and Dr. Bauer's department.

In the obituary notice of the Rev. F. J. Jervis-Smith, F.R.S., which appeared in Nature of September 7, the writer, who was an old friend, remarked:—"Trained as a mechanical engineer, he gave up the calling of his choice, went to Oxford, and entered the Church for family reasons." Mr. E. J. Jervis-Smith writes to say that this is not correct, as his father's education was entirely classical. Also, he says, "My father intended from his earliest childhood to enter Holy Orders, as it was his father's greatest wish that he should do so." The Rev. F. J. Jervis-Smith certainly knew all the tricks of the engineer's workshop, and prided himself upon so doing; and this led the writer of the notice to believe that he had been trained in mechanical engineering, instead of receiving the usual classical education with the intention of entering Holy Orders. His interests were, however, scientific and engineering, whatever was his educational course, for his son says:—"As a child my father saw a great deal of Mr. William Ellis Metford, who imbued him with a love of mechanics and scientific apparatus. He had a small scientific and mechanical laboratory of his own at Taunton, where he carried on research work before going to Oxford as Millard lecturer."

We learn from *The Lancet* that a society for the prevention of diseases and epidemics (Gesellschaft zur Bekämpfung von Volksseuchen) has been founded in Austria which will act in concert with the Public Board of Health and the Sanitary Department of the Ministry of the Interior. Its aims are to supplement the endeavours of the public authorities in combating diseases, to improve the general circumstances of patients and their families belonging to the poorer classes, to provide adequately trained attendants for the care and nursing of patients during epidemics, and to organise medical help and hospital accommodation in non-epidemic times. The society will also encourage investigations relative to the spread of diseases, as well as their prophylaxis and treatment, and will, so far as possible, make the general public acquainted with the results of these scientific researches. The society will endeavour to improve the knowledge, not only of the so-called epidemics, but also of all diseases which prevail extensively. The present intention is that the scientific part of the work shall be divided amongst all practitioners in the country through the instrumentality of the local medical unions and councils. It is thought possible that an international society for the study of epidemic diseases may in the course of time be called into existence.

Man for September contains an important report by Mr. C. L. Woolley on the great collection of pottery brought by Dr. M. A. Stein from Chinese Turkestan and western China, which dates from the first century B.C. onwards. Much of it consists of hand-made pots fired in an open hearth, as is still the custom in modern India, and showing in the section the uneven bands of colour usually resulting from this process. An important advance is illustrated by the moulded ware, in which the moulds employed show distinct Gandhara influence. The wheel-made pots are usually of finely levigated clay, kiln-fired, sometimes smothered, sometimes of a clear terra-cotta red. It is not necessary to suppose that the glazed specimens were imported, because similar glazes, though on a different body, were certainly locally produced.

Recent reports announce numerous important prehistoric finds in this country. In a sepulchral barrow of the Bronze age at Eye, near Peterborough, a pot containing food offerings to the dead was unearthed in 1910. But it was only in the present year that the actual interment was discovered, the skeleton being that of a tall man, whose corpse had been laid on the right side with the head to the south-west, and the arms and legs flexed, a disposition typical of this period. The absence of articles accompanying the interment makes it difficult to fix the date more closely than in the second millennium B.C. During the visit of the Cambrian Association to Promontory Hill Fort, which overlooks the Vale of Clwyd, near which some fine bronze trappings were found some forty years ago, the accidental discovery by a member of the party of some fragments of pottery at the mouth of a rabbit burrow enabled Prof. Boyd Dawkins to conclude that this site had been occupied from the later Bronze and Iron age down to the end of the second or third century of the Roman occupation.

The Times of September 6, in its second article describing the excavations made by Commendatore Boni at the Roman Forum, throws some light on the problems connected with the famous Niger lapis, or black stone, which was unearthed in 1890, and has since supplied the material for a vigorous controversy. It is a slab of black marble covering remains which are certainly of great antiquity, including a broken rectangular stele bearing an inscription, which has hitherto remained undeciphered. These remains bear marks of intentional demolition; and close to the place were found a series of dedicatory gifts, such as small idols of clay, bone, or bronze, with some river sand, which was obviously brought here from a distance to serve some special religious purpose. It thus appears to mark the site of a ruined sanctuary, hitherto assumed to be an unlucky spot—the grave of Romulus, or of his foster-father Faustulus, or Hostus Hostilius. Commendatore Boni now believes that this was the site of the rostra destroyed by the patricians at the beginning of the civil war, about 124 B.C. The present remains, he supposes, mark an expiatory rite performed in obedience to an oracle procured from the shrine of Demeter at Enna, in Sicily, from which advice was sought how best to expiate the contamination of the Forum by the slaughter of so many Roman citizens. It thus represented a popular monument intended to be a lasting memorial of plebeian resentment against this outrage on the part of the aristocratic faction.

The contents of Nos. 3 and 4 of the second volume of the Economic Proceedings of the Royal Dublin Society include an article by Prof. G. H. Carpenter on insects, &c., injurious to crops and trees observed in Ireland in 1910.

We have received a copy of the report of the museum of the county borough of Warrington for the year ending June 30. It may be noticed that the museum accepts such miscellaneous objects as a Rhone beaver and a portion of tree-trunk gnawed by the Canadian representative of the same.

In the September number of *British Birds* Miss E. L. Turner records the breeding of the bittern in Norfolk during the past summer. It appears that three adult birds were observed in the latter part of December, 1910; booming commenced at the end of the following January, and continued, with the exception of February, until June 4, when it ceased. A half-fledged young bird was taken on July 8 (and subsequently liberated) which appeared to be four or five weeks old; and it is suggested that this was the latest of the brood, the other members of which had dispersed. The empty nest was observed. If, as appears to be the case, the cock ceases to boom immediately after the young are hatched, it may be inferred that both parents share in the task of feeding their offspring. Although the bittern is doubtless a night-feeder, it appears to tend its young at intervals throughout the day, as one at least of the old birds was observed to visit the nest several times a day.

A FEW weeks ago reference was made in this journal (August 10, p. 200) to the discovery of a breeding colony of fulmar petrels at Berriedale Head, Caithness. In the September number of *The Irish Naturalist* Mr. R. J. Ussher announces the existence of a colony of these birds on a high, perpendicular cliff on the coast of Mayo, this being the first instance of the breeding of the species in Ireland. According to the local boatmen, these white "cawnoges" made their appearance on the cliff, which is about 700 feet high, four years ago, and have been steadily increasing in numbers since that date. On July 10 Mr. Ussher scaled the cliff, and, with the aid of binoculars, counted eighteen sitting fulmars on a ledge about 400 feet above the water, the specific identity of the bird being rendered certain by individuals which flew close overhead. It is also stated that a colony of about twenty fulmars was observed on a cliff in Ulster in May, the birds, according to local report, having made their appearance in 1910, and remained through the breeding season. Mr. Ussher does not believe that the fulmars have been attracted by the whaling stations on the west coast of Ireland, but that their appearance is part of the extension of the breeding area of the species now in progress. Of this extension Mr. R. M. Barrington gives a summary in a separate paper in the same serial.

IN an article on the purpose and some principles of systematic zoology, published in *The Popular Science Monthly* for September, Mr. Hubert Lyman enunciates the following five propositions, which he regards as of prime importance in regard to the present condition of the science and the lines on which it is studied:—(1) Naming and describing new species and correcting nomenclatural errors, while valuable, and indeed essential, is frankly the most elementary, and hence the lowest, form of zoology. (2) To be of real worth and permanent value, the systematic study of any group of animals must take into account, so far as they are known, the pre- and post-natal development, the geological history, and the geographical distribution of the species which compose it. (3) While genera and larger groups in our systems of classification ought to be based on relationship, their delimitation is often of necessity artificial, and is purely a matter of expediency and convenience. (4) The value of a character for distinguishing species or higher groups depends chiefly on its constancy, and for indicating relationships within a group on its significance; in neither case is its conspicuousness anything more than a matter of convenience. (5) In all systematic work, the line between facts of nature and opinions of the worker should be sharply drawn; the value of the work often depends on the clearness of this line. The article is certainly opportune, as there is a decided tendency at the present day to regard systematic work as the end and final aim of zoology instead of the foundation.

A NOTE by Prof. A. C. Seward in *The Geological Magazine* (July) describes a fossil bipinnate leaf, taken from the Molteno beds at the base of the Stormberg series in Cape Colony, that supplies the type of a new genus, Stormbergia. The stalked pinnules furnish the chief distinctive feature of what is regarded as a probable fern frond; in some respects it resembles *Bernoullia helvetica*, a fossil fern of Rhætic age.

IT is obvious that the task of exhibiting alpine plants on tables in April calls for considerable enterprise and previous calculation. A prize offered by the Royal Horticultural Society of Ireland has inspired an article on the subject, contributed by Mr. W. H. Paine to *Irish Gardening* (September). The cultural directions refer to species of Primula, Androsace, Viola, Aubrietia, Saxifraga, Shortia, and Anemone. With regard to methods, while the various plants have their special soil requirements, it is recommended that the plants should be panned in autumn to get established, then plunged in sand and covered with a depth of leaves, sand, or bracken through the winter. Preparations for bringing the plants into exhibiting condition must be started several weeks before the show takes place.

WITH the object of estimating the aperture of stomata, Dr. Francis Darwin, assisted by Miss D. F. M. Pertz, has devised an ingenious apparatus that he calls a porometer. It consists of a small campanulate glass vessel attached to an air chamber. The glass vessel is fixed to a leaf, and pressure in the chamber is reduced, whereby air is drawn through the stomata. The rate of flow of the air into the chamber is measured, and supplies a comparative indicator of changes in the apertures of the stomata. The porometer provides a continuous method; it indicates the movements of a group of living cells, and possesses a great advantage over the horn hygroscope and cobalt paper, inasmuch as the readings of the instrument are independent of transpiration. The experiments described in the Proceedings of the Royal Society (vol. lxxxiv.) are designed to show how illumination and water supply influences stomatal aperture.

THE main features of an address, delivered by Mr. R. R. Gates before the National Academy of Sciences at St. Louis, on the mode of chromosome reduction, is published in *The Botanical Gazette* (May). With regard to general facts, it is noted that there are two ordinary methods of chromosome reduction in organisms, the one involving an end-to-end arrangement, the other a side-by-side pairing; the difference is not of phylogenetic or hereditary value, but is a matter of cell mechanics. Consequent upon the important point first demonstrated by Strasburger, that the chromosomes are in homologous pairs throughout the tissues of the sporophyte, it is argued that the reduction process consists in a segregation of the paired somatic chromosomes in the heterotypic mitosis, and a split of these chromosomes in the homotypic, and that the supposed function of synapsis to bring about a pairing of the chromosomes is not justified.

A MEMORANDUM on the monsoon conditions prevailing during June and July, with a forecast for August and September, issued by the officiating director-general of Indian observatories on July 30, states that an almost complete break in the rains began between June 18 and 26. On July 5 a fresh advance of the Arabian Sea current occurred, and extended rapidly into the interior; but by July 15 the monsoon had again begun to weaken, and a second break set in, which lasted until about July 27. The total rainfall of this month fell short of the normal by about 34 per cent., the defect being almost general. From a consideration of the various extra-Indian conditions which usually influence the behaviour of the monsoon, the inference is drawn that although the latter may be expected to continue unsteady and weak, the drought is likely to become less general as the season progresses. The combined rainfall of August and September, however, will probably fall short of the normal, particularly in parts of central and north-west India. Reports subsequently received by telegraph seem to show that this forecast is, in the main, likely to be fulfilled.

The Scientific American of August 19 publishes a most interesting article entitled "The Head of the Official Meteorological World," accompanied by an excellent photograph of Dr. W. N. Shaw, taken by Mrs. Shaw (who, in addition to her skill as an amateur photographer, takes an active interest in educational matters). The presidency of the International Meteorological Committee, comprising the principal directors of the national weather services of the world, is by no means an easy position. Great tact is required at meetings in reconciling opinions which are sometimes quite opposed to each other, in introducing new subjects for discussion, and in referring difficult matters to the consideration of carefully selected subcommittees. The writer of the article (Mr. C. F. Talman) points out that the committee was singularly fortunate in having among its members a man ideally fitted to occupy this post, vacated by Prof. Mascart (head of the French Meteorological Service) shortly before his death in 1907. He reviews with much ability the varied and useful work of the present holder of the position, from the beginning of his academic career, the marks of his "directive genius" as shown in the operations of the Meteorological Office, and briefly sketches some of the evidences of the "advanced position that he has come to occupy in the general campaign of meteorological research." To mention one important matter only, the British meteorological year-books and their appendices now appear so punctually that they set the pace for similar publications throughout the world.

IN *The Cairo Scientific Journal* for August Dr. W. F. Hume gives an account of the finding of a meteorite which fell in the delta of the Nile on June 28, in the village lands of El Nakhla, some 44 kilometres E.S.E. of Alexandria. Fragments were reported as having fallen at five separate localities, and several pieces were secured for examination. The specific gravity was 3·4, and the interior of the specimen showed prismatic crystals, probably of enstatite, and yellow grains of olivine or peridot; the outer surface was covered with a black, glistening skin rich in iron. Specimens were exhibited in Section C at the British Association, where Dr. Hume gave further details.

IN the same number Mr. J. I. Craig describes a fragment of a sundial which was found at the temple of Basa in the Sudan, in lat. 16° 42′ and long. 33° 53′ E. It is constructed from a block of marble which is not of local origin, but must have been imported, probably from Europe. It contains portions of seven converging lines, and two curved lines on a conoidal surface, and much resembles two sundials which are now in the museum at Alexandria. Since the worked surface is not complete, and what is left is not a true geometrical surface, computation of the locality for which the dial was constructed is impossible; but it is suggested that the block was carved after an Alexandrian model, and the hour lines were adjusted for a place in the Sudan. Illustrations of the dial are given, but the article does not mention where it is preserved.

MR. H. GRINDELL MATTHEWS recently succeeded in establishing communication by means of his wireless telephone over a distance of five and a half miles by speaking from Beachley, near Chepstow, to New Passage, on the opposite bank of the Severn. The system will now be tried by the War Office at Aldershot, which will be given the option of purchasing Mr. Matthews's invention. Meanwhile further experiments are being carried out, and attempts to communicate from Chepstow to Cardiff, a distance of twenty-five miles, are being made. Cody man-lifting kites play a prominent part in the necessary arrangements, and apparently Mr. Matthews recently received a bad electric shock from the wire attached to the kite, although no power was being used at the time. Mr. Matthews was also able to obtain sparks when the kite wire was touched by another coil of wire. This apparently has convinced Mr. Matthews that, given a sufficient length of insulated wire, it is possible to collect energy from the atmosphere. We shall wait to see the results of further experiments in this direction, which doubtless Mr. Matthews will make shortly.

THE researches of Pictet have made it probable that most of the plant alkaloids are to be regarded as degradation products of vegetable proteins, since they are formed by the union of these simple substances with formaldehyde. The ring compounds synthesised in this manner are subjected to further minor changes in the plant, such as oxidation, reduction, replacement of hydroxyl, &c., and converted into the natural alkaloids. Pictet showed how in this way the majority of the alkaloids could be supposed to be formed, but specially excluded the isoquinoline alkaloids, which comprise such important representatives as morphine and the alkaloids of opium, berberine, &c., from his hypothesis. In the current number of the *Berichte* he shows how tyrosine or phenylalanine condense with formaldehyde to tetrahydroisoquinoline derivatives, and is able to effect the complete synthesis of hydroxyberberine starting from homopiperonylamine and formaldehyde. The conception that alkaloids are derived from proteins is therefore to be extended also to the isoquinoline alkaloids.

THE September issue of *The Central*, the magazine of the City and Guilds of London Central Technical College Old Students' Association, is of special interest. It opens with an appreciative account, by Mr. G. C. Turner, of the career and work of Prof. Henrici, F.R.S., who retired from his professorship at the college at the end of last term. A full report follows of the banquet to Prof. H. E. Armstrong, F.R.S., in May last, which was duly noted in NATURE at the time. Important articles by old students of the college deal with lifeboat launching slipways, the training of alluvial rivers by the guide-bank system, modern simple span truss-bridge construction, and the electro-technical commission.

OUR ASTRONOMICAL COLUMN.

THE EXPECTED RETURN OF COMET 1905 II. (BORRELLY). —From a number of observations made in 1905, M. Fayet has calculated a definite orbit for Borrelly's comet of that year, and finds that perihelion passage should take place on 1911 December 18·601 (Paris M.T.). Ephemerides based on these elements are published in No. 4523 of the *Astronomische Nachrichten,* and the complete discussion is to appear shortly in vol. xxx. of the Annals of the Paris Observatory.

Until the end of November the southern declination of the comet will make observations impossible in our northern observatories, although the general conditions of this apparition are more favourable than those of 1905.

THE DISCOVERY OF ECLIPSING VARIABLES; β AURIGÆ A VARIABLE STAR.—In an interesting paper appearing in